REMARKS

In accordance with the foregoing, claims 1, 3, 38, 39, 42 and 43 have been amended. Claim 2, 40 and 41 have been cancelled. Claims 1, 3-39, 42 and 43 are pending and under consideration.

ALLOWABLE SUBJECT MATTER:

On pages 10 and 11, the Examiner allowed claims 14, 18 and 30 and objected to claims 15, 19, 28, 29 and 31.

The rejection of the independent claims, upon which objected claims 15, 19, 28, 29 and 31 depend is traversed below.

Therefore, claims 15, 19, 28, 29 and 31are allowable.

REJECTION UNDER 35 U.S.C. § 103(a):

Claims 1, 2, 7-11, 16, 17, 32-35 and 40-43 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,107,346 (Bowers) and U.S. Patent No. 5,757,517 (Couwenhoven). As mentioned above, claims 2, 40 and 41 are cancelled herein.

On page 9 of the outstanding Office Action, the Examiner acknowledges that Couwenhoven does not explicitly disclose carrying out discrimination for only one of plural multilevel images and using result of the same in halftoning remaining multilevel input images having substantially identical profiles. However, the Examiner asserts that it is obvious for one skilled in the art to process all identical images in like manner. The Applicants respectfully traverse the Examiner's statement and request that the Examiner to produce authority for the statement.

The Examiner also states that it is well known that the Prewitt filter utilizes neighboring pixels surrounding the noteworthy pixel and the neighboring pixels to the right and below of the noteworthy pixel are inherently positioned downstream of the noteworthy pixel. The Applicants respectfully traverse the Examiner's statement and demand the Examiner to produce authority for the statement. The Applicants specifically point out the following errors in the Examiner's action.

First, the Examiner uses common knowledge ("well-known") evidence for the rejection. As explained in the M.P.E.P.,

any facts so noticed should... server only to "fill in the gaps" in an insubstantial manner which might exist in the evidentiary showing made by the Examiner to support a particular ground for rejection. It is never appropriate to rely solely on common knowledge in the art without evidentiary support in the record as the principal evidence upon which a rejection is based.

M.P.E.P. § 2144.03

Second, the noticed fact is not considered to be common knowledge or well-know in the art. In this case, the limitation is not of notorious character or capable of instant and unquestionable demonstration as being well-known. Instead, this limitation is unique to the present invention (see, M.P.E.P. § 2144.03(A) (the notice of facts beyond the record which may be taken by the Examiner must be "capable of such instant and unquestionable demonstration as to defy dispute").

Third, there is no evidence supporting the Examiner's assertion (see, M.P.E.P. § 2144.03(B) ("there must be some form of evidence in the record to support an assertion of common knowledge").

Fourth, the Examiner appears to be basing the rejections, at least in part, on personal knowledge. The Examiner is required under 37 C.F.R. § 1.104(d)(2) to support such assertion with an affidavit when called for by the Applicant. The Examiner is called upon to support such assertion.

Further, even if the Examiner's assertion and rejection based on common knowledge is valid, the present invention is distinguishable as set forth below.

In Bowers, binary encoding includes gray-scale value of a pixel plus propagated error calculated using a pseudo random weight. For example, the binary encoding for the pixel located at coordinates (x+1,y) becomes the detected gray-scale value for that particular pixel location and the propagated error err1(r1*Ex, y), for the pixel located at (x+1,y+1) becomes the detected gray-scale value for that particular pixel and propagated error err2 (r2*Ex,y) (see, col. 7, lines 46-52 and col. 7, line 67 through col. 8, line 7).

The Examiner acknowledges that Bowers does not disclose calculation of the multilevel value based on the multilevel values of pixels other than a value of the noteworthy pixel, but relies on Couwenhoven as teaching the same. The activity detector (80) in Couwenhoven computes an image activity signal for the error diffusion where the activity signal is computed

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using a difference between input pixel values of neighboring pixels, statistical variance of the input pixel values of neighboring pixels and a convolution filter including input pixel values of neighboring pixels (see, col. 5, lines 45 through col. 6, line 2).

Independent claims 1, 38 and 39 recite, "calculating the multilevel value of a given noteworthy pixel of the multilevel input image, as an estimated value of the noteworthy pixel, based on the multilevel values of pixels in a predetermined area that centers around a position for estimation located predetermined distance apart from the noteworthy pixel." Claims 1, 38 and 39 further recite, "converting the estimated multilevel value of the noteworthy pixel into a binary value in accordance with the multilevel values each time the multilevel input image is converted into a binary image."

Similarly, claims 42 and 44 recite that a multilevel value of a given noteworthy pixel is calculated "based on the multilevel values of non-binarized pixels in a predetermined area that centers around a position for estimation located predetermined distance apart from the noteworthy pixel."

Bowers and Couwenhoven are silent regarding an estimated value of a noteworthy pixel estimated based on the multilevel values of pixels " in a predetermined area that centers around a position for estimation located predetermined distance apart from the noteworthy pixel", as recited in each of the independent claims.

It is submitted that the independent claims are patentably distinguishable over Bowers and Couwenhoven.

For at least the above-mentioned reasons, Applicants respectfully submit that claims depending from the independent are also patentably distinguishable over Bowers and Couwenhoven. The dependent claims are also independently patentable. For example, claim 2 recites that "said calculating, the estimated value of the noteworthy pixel is calculated based on the multilevel values of pixels in a predetermined area that is a predetermined distance apart from the noteworthy pixel." Bowers and Couwenhoven do not teach or suggest these features of claim 2.

Therefore, withdrawal of the rejection is respectfully requested.

NEW CLAIM:

New claim 44 has been added to recite, "directly calculating a value of a noteworthy pixel of the multilevel input image from multilevel values of pixels prior to halftoning" and "selectively

diffusing a possible error occurring in the binary value and subsequently changing error diffusion techniques with respect to each of the pixels surrounding the noteworthy pixel."

Bowers and Couwenhoven, alone or in combination, do not teach or suggest "directly calculating a value of a noteworthy pixel of the multilevel input image from multilevel values of pixels prior to halftoning" and "selectively" using "diffusion techniques" with respect to the image.

Therefore, it is respectfully submitted that new claim 44 is patentably distinguishable over Bowers and Couwenhoven.

CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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